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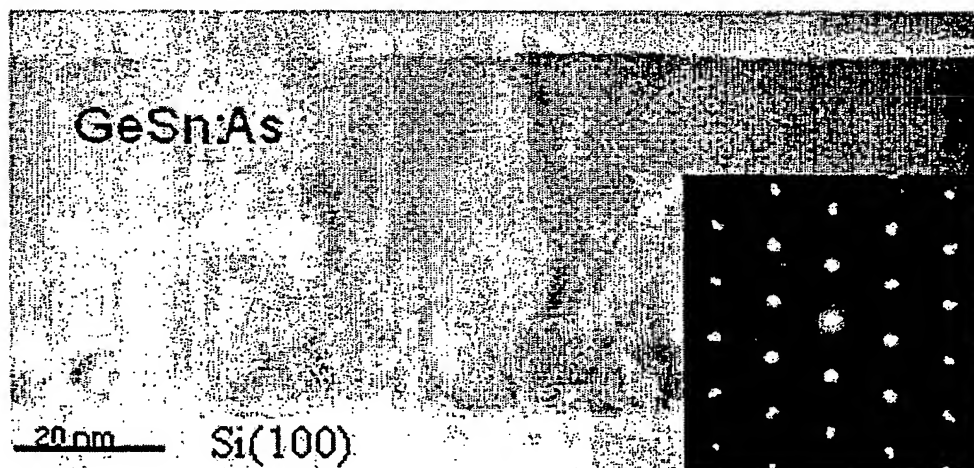
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[Continued on next page]

(54) Title: **METHOD FOR PREPARING $\text{Ge}_{1-x-y}\text{Sn}_x\text{E}_y$ (E=P, As, Sb) SEMICONDUCTORS AND RELATED Si-Ge-Sn-E AND Si-Ge-E ANALOGS**



(57) Abstract: A process for is provided for synthesizing a compound having the formula $\text{E}(\text{GeH}_3)_3$, wherein E is selected from the group consisting of arsenic (As), antimony (Sb) and phosphorus (P). GeH_3Br and $[\text{CH}_3]_3\text{Si}]\text{E}$ are combined under conditions whereby $\text{E}(\text{GeH}_3)_3$ is obtained. The $\text{E}(\text{GeH}_3)_3$ is purified by trap-to-trap fractionation. Yields from about 70% to about 76% can be obtained. The $\text{E}(\text{GeH}_3)_3$ can be used as a gaseous precursor for doping a region of a semiconductor material comprising Ge, SnGe, SiGe and SiGeSn in a chemical vapor deposition reaction chamber.



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